RECORD OF ORAL HEARING

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GUILLERMO J. TEARNEY, BRETT EUGENE BOUMA,
MILEN STEFANOV SHISKOV, and JONATHAN JAY ROSEN

Appeal 2012-004672
Application 09/709,162
Technology Center 3700

Oral Hearing Held: November 15, 2012

Before DONALD E. ADAMS, ERIC B. GRIMES, and ERICA A. FRANKLIN, *Administrative Patent Judges.*

ON BEHALF OF THE APPELLANT:

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The above-entitled matter came on for hearing on Thursday, November 15, 2012, commencing at 10:11 a.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia, before Karen Guy.

PROCEEDINGS

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JUDGE ADAMS: Okay, so now we're going to move over to the file number 2012-004672.

MR. ABELEV: Yes.

JUDGE ADAMS: Okay.

MR. ABELEV: All right, so let's turn now to the case. Each of the rejected claims requires image formulance arrangement, a dispersive arrangement that receives a portion of the electromagnetic radiation, a further arrangement that obtains 2D or 3D images associated with the structure based on radiation obtained from the structure.

JUDGE ADAMS: And that would be a display, right?

MR. ABELEV: It obtains information. It could be -- it could be a computer.

JUDGE ADAMS: Okay.

MR. ABELEV: So, obtaining --

JUDGE ADAMS: And splitting in combination with the computer.

MR. ABELEV: Right.

JUDGE ADAMS: Some images --

MR. ABELEV: Some imaging.

JUDGE ADAMS: -- from device.

MR. ABELEV: Some imaging. And then, well, the important feature

of each of the claims is that the -- the image-forming lens arrangement actually forms an image of the structure.

JUDGE ADAMS: Okay, let's begin with you directing me to your specification for a definition of an image-forming lens.

MR. ABELEV: Okay. So, I have that here. So, example -- example of image-forming lens arrangement include an objective, which is --

JUDGE ADAMS: Can you tell me where it says --

MR. ABELEV: Sure, it's on page 8, line 19, I believe. Double check here. No, that's wrong. Sorry.

Sorry, page 11, lines 10 through 13. Ten through 13, yes, so it could be an objective lens. Objective could be a lens, it could be a GRIN lens, it could be a spherical lens, plano cave lens. It could be multi-element lens assemblies.

JUDGE ADAMS: In what way are these image-forming? I'm trying to get a -- I'm trying to wrap my head around what you mean by image-forming. So, here you've defined -- here you've laid out various types of lenses, but in what way are these image-forming lenses? So, where in your specification do you have something that says image-forming lens?

MR. ABELEV: So, the specific language is not included in the specification, but the way, which I'm pretty sure it doesn't have to be the exact language in the spec, but it's understood by the arrangements of Figure 2, A through E, that lens 32, the way it is provided forms an image because

the impact of -- on the -- on the --

JUDGE ADAMS: Well, I think this is important because it seems from your briefing that you were suggesting that this image-forming lens is capable of -- you just look at the lens and see an image. And the Examiner is saying, well, this image-forming lens is something that directs information to this display, so that it can be viewed on a display.

MR. ABELEV: Right.

JUDGE ADAMS: So, my question to you is in formulating who's right, what does your specification tell us to lead us to understand an image-forming lens supports your position?

MR. ABELEV: So, the way that this -- the arrangement is provided in the drawings and described in the specification. So, lens is provided -- if you look at Figure 2-A for example -- or it may be 2-B.

JUDGE ADAMS: Well, I'm looking at Figure 1. Take a look at Figure 1.

MR. ABELEV: Figure 1 does not provide that kind of detail or understanding. Figure 2-B does.

JUDGE ADAMS: Well, we have the source. Well, let's just start with Figure 1. We have the source, we have this beam redirecting element. What could that be? A lens?

MR. ABELEV: Beam -- which number?

JUDGE ADAMS: Twenty.

MR. ABELEV: Oh, 20? That's a -- it's either a splitter or a, you know, circulator or --

JUDGE ADAMS: Okay. And then we do all this stuff with the probe on the righthand side, the one -- when the EM radiation bounces back off of your -- off your structure, it's directed to element 22, which is a display system. Right? And then as I understand it, your invention contemplates a number of lenses incorporated into this scheme that you outlined in Figure 1. Is that right?

MR. ABELEV: That's correct. Well, not one or more. I mean, at this point it's--

JUDGE ADAMS: Right. So, we have an image-forming lens somewhere in this scheme outlined in Figure 1, and it's wrapped into a display system, which is an imaging system, which is consistent with your claim, which says at least one further arrangement, which is structured to obtain information based on radiation from the structure, wherein the information is at least one of the two-dimensional or three-dimensional image. And that's what we discussed when you were outlining your claim.

MR. ABELEV: Sure.

JUDGE ADAMS: So, your claim suggests or contemplates an imaging system that's some display. And your figures support that, and your specification doesn't support literally any other different interpretation for an image-forming lens as we just discussed. Is that right?

MR. ABELEV: Well, the specification doesn't explicitly state --

JUDGE ADAMS: So, basically, we don't have any support in your specification for looking at a lens and seeing an image. Is that the idea?

MR. ABELEV: Looking at a lens, that's probably -- that's not correct.

JUDGE ADAMS: Okay --

MR. ABELEV: In broad sense, which you could describe as correct, but it is important to know that this limitation is key, that the image-forming lens forms an image. Because the lens is provided in Figure 2-B, let's say, right next to a dispersion -- dispersion element, which could be, you know, a prism, it could be anything. But because it provided in the back path, so in the upward flow of radiation from the sample, 42, going up to 36, which is the dispersion element, to the lens, you are getting an image of the sample.

JUDGE GRIMES: But the lens in that -- in that figure, the lens is simply concentrating the light, isn't it? I mean, isn't that all a lens does?

MR. ABELEV: It receives light, and in this particular configuration, it forms an image, where that's visible to the eye or it's invisible to the eye, nevertheless, the image is formed. There's a specific formula described in the appellant's briefs.

JUDGE GRIMES: Is it your position that the image-forming lens arrangement then includes something like that dispersion element 36 or whatever it was?

MR. ABELEV: That's a separate element in the claim.

JUDGE GRIMES: So, how is the lens any different, then?

MR. ABELEV: So, lens dispersion element, you direct radiation from the lens to the dispersion element or arrangement. It hits the sample, and then bounce back, reflected back to the dispersion element and received back at the lens.

JUDGE GRIMES: I understand that, but there's nothing different about the lens that distinguishes this particular lens from any other lens. It's just that it's receiving light that will form an image, right?

MR. ABELEV: In this -- that is correct. So, depending where the lens is, depending where the lens is positioned, it either will -- will receive an image or it won't. So, pointing --

JUDGE ADAMS: Let me just make sure I'm clear, based on what you're telling us. So, when you refer to a lens being capable of forming the image that's either visible to the eye or not visible to the eye, when it's not visible to the eye, we're talking about directing that information into some sort of arrangement that allows you to visualize another display. Is that right?

MR. ABELEV: To some extent, yes, but it has to be an image. Image does not -- doesn't always have to be visualized to the human eye. It can be visualized, you know, under a microscope.

JUDGE ADAMS: So, I'm really not seeing any difference here

between your claimed invention and what the Examiner says is suggested by or taught by the prior art.

MR. ABELEV: So, addressing that point, the Examiner appears to now point to lens 41, if I know -- if I see correctly. And that lens is in Figure 21 of *Kittrell*. So, 23, 21, 20, that lens is provided at an opposite end of the -- of the fiber, so it's -- in our situation, we have a source providing radiation, splitter -- splitter forwarding radiation through the fiber. And then fiber receives the radiation; forwards it through the lens, which is the -- which would be interpreted as a lens -- image-forming lens arrangement. Then that radiation goes through the dispersement arrangement, hits the sample, comes back through the dispersion to the lens.

Here, the tissue site, going to the tissue site, that goes to Figure 13. If you look at Figure 21, it directs you to Figure 13, and that's the head section of *Kittrell*. So, in *Kittrell*, the head section has the prism, which the Examiner points to as being the dispersion element. And that prism, through the shield, 12, which is -- which could be Examiner's, you know, point that it could be also a lens. So, from the prism through the shield and comes back to the prism. That return radiation through the prism is not -- does not hit any kind of lens arrangement.

JUDGE GRIMES: Number 41, right?

MR. ABELEV: 41. It doesn't -- it doesn't hit until it goes through the fiber.

JUDGE ADAMS: So?

MR. ABELEV: That means that it --

JUDGE ADAMS: I'm missing your point.

MR. ABELEV: Well, the point is that in this particular situation there is no ability for 41 to actually, you know, have any kind of image. It does not obtain any image. It obtains radiation, which is not an image at all. And based on the formula provided by focal distances --

JUDGE ADAMS: Well, wait, wait. Reflected light would be an image that's not -- would be capable of forming an image that's not necessarily seen by the human eye. It's collected and presented on a display. I think we agreed to all that.

MR. ABELEV: Yes, but that requires a separate arrangement to generate --

JUDGE ADAMS: Okay.

MR. ABELEV: -- generate image. We have to --

JUDGE ADAMS: So, anything else on that?

MR. ABELEV: So, that's a good point I'd like to address. The Examiner says that let's say a lens arrangement could be, you know, includes a computer that could generate an image. So, that's taking the claim in a very broad sense and saying, okay, well, you've got image-forming arrangement -- lens arrangement, which by extension could have the lenses, could have, you know, could have the fiber, it could have lens 41, it

could have the dispersion -- or it could have --

JUDGE ADAMS: Well, I think --

MR. ABELEV: -- a computer.

JUDGE ADAMS: But as we discussed early on, there's really nothing in your specification to support any different interpretation of image-forming lens. An image-forming lens, according to claim 68, is, if I'm understanding it, based on our discussion, is nothing different than what the Examiner suggested. It could be passed through -- this information could have been passed through the lens, passed through a computer, and imaged on a display.

MR. ABELEV: Well, that was --

JUDGE ADAMS: I mean, you're taking a very narrow view of image-forming lens and presenting that to us, but I'm not sure that that's consistent with what your specification supports, as we've already discussed.

MR. ABELEV: So, right, that's the reason we amended the claim to be very specific, to say the image-forming lens forms an image.

JUDGE ADAMS: Well, unfortunately, the specification allows us to read that a little broader than how you would like us to interpret it, right?

MR. ABELEV: Well, it says what it says.

JUDGE ADAMS: It sure does.

MR. ABELEV: It forms -- it forms an image.

JUDGE ADAMS: And we're still saying, though, that forms an

image, which can be either seen by the human eye or not, unless it's passed through some sort of mechanism that allows you to visualize it.

MR. ABELEV: You mean, so you're saying -- the position that could be interpreted, 41, forms an image? Lens 41 of *Kittrell* forms an image? Which is according to --

JUDGE ADAMS: Is it a lens that is capable once the information is passed through it to allow imaging on a computer screen? Well, that seems to be what *Kittrell* suggests.

MR. ABELEV: Right, so they've got two different -- the interpretation here of the lens arrangement includes a computer.

JUDGE ADAMS: Well that's why we started with what do you mean by image-forming lens or --

MR. ABELEV: Right, so -- so, if there's a -- something that generates an image in *Kittrell*, that's a computer. Computer is the only thing that can generate an image based on this special --

JUDGE ADAMS: I think we've beaten this issue --

MR. ABELEV: I just want to make sure that there's two separate --

JUDGE ADAMS: No, we're very clear on what you -- what you intend.

MR. ABELEV: Right, so there's two separate things. So, one it generates a two-dimensional, three-dimensional image. That's a computer.

JUDGE ADAMS: I think that's articulated in your briefing.

MR. ABELEV: Now, if you have any other questions, I'd also like to talk about claim 147. Now, this claim recites that the end portion of the optical fiber is provided at a position of an image plane of at least one portion of the structure which is established by the lens. And --

JUDGE ADAMS: If I could stop you there, and this, again, I'm trying to understand what we're talking about. This phrase of at least one portion, so we have the optical fiber as an end portion.

MR. ABELEV: Yes.

JUDGE ADAMS: That is provided at a position of an image plane of at least one portion.

MR. ABELEV: Of the structure.

JUDGE ADAMS: Where is the antecedent for that? Because we have to look to 74.

MR. ABELEV: Sure.

JUDGE ADAMS: And 74 depends from 68 and suggests wherein the optical wave guide is an optical fiber, so that doesn't help.

MR. ABELEV: I have to locate the brief.

JUDGE ADAMS: And then we go to 68, and we have at least one portion of the electromagnetic radiation. Is that what you're referring to within the claim 147?

MR. ABELEV: Just taking a look at 147. It should have been of the sample. That's a typo, it should have been at least one section.

JUDGE ADAMS: At least one section of what?

MR. ABELEV: Of the anatomical structure, so that's -- that has supported claim 68, the last element of the dispersive arrangement.

JUDGE ADAMS: Well, at least one portion also has support in claim -- or excuse me, 68. It's at least one portion of the electromagnetic radiation.

MR. ABELEV: Right, and that would make no sense from a physics point of view.

JUDGE ADAMS: Absolutely.

MR. ABELEV: Right. So, I mean --

JUDGE ADAMS: And, so, basically you can see that as written and presented to the Board, claim 147 makes no sense.

MR. ABELEV: It was our understanding that it was clear, because 112, second paragraph, they showed a possible vagueness, which we could address easily on any kind of an amendment. But --

JUDGE ADAMS: What does -- what end -- you refer in claim 147 to an end portion. Which end? There's two ends of this wave-guide -- this apparatus. What end are you speaking to when you speak to an end portion?

MR. ABELEV: So, the end portion that's closer to the -- closer to the sample.

JUDGE ADAMS: Closer to the anatomical structure?

MR. ABELEV: Correct.

JUDGE ADAMS: So, the optical fiber has an end portion that's adjacent to the anatomical structure that is provided in a position of an image plan. Can you direct me to some portion of your specification that speaks to an image plane?

MR. ABELEV: I would need to take a look closely at the spec. I don't want to waste any of the Board's time trying to find it.

JUDGE ADAMS: I can actually help you. Take a look at page 19 in your specification, line 13.

MR. ABELEV: Okay.

JUDGE ADAMS: The light reflects off of the sample/imaging plane, 112, back through the foregoing elements and is received by a color monitor, 114. So, when we speak of this imaging plane, we're actually just talking about some region --

MR. ABELEV: Within the sample or on top of the sample.

JUDGE ADAMS: Some region in that area from the business end of the catheter to the -- or the endoscope to the anatomical structure. Is that right?

MR. ABELEV: That's correct. So, that's our position, that the -- that the illustration in *Kittrell* in Figure 21 -- 21? No, 13, I believe. It doesn't provide any mention of the fiber, at the end of the fiber being at that image plane.

JUDGE ADAMS: Now, you're directing us to figures --

MR. ABELEV: Nope, it's not there.

JUDGE ADAMS: -- Figure 13 of *Kittrell*, which there are many --

MR. ABELEV: Thirteen-A through --

JUDGE ADAMS: J?

MR. ABELEV: -- J. I don't see any image plane.

JUDGE ADAMS: Well, that's the business end of the endoscope of *Kittrell*, is that right?

MR. ABELEV: That's the head portion, yes.

JUDGE ADAMS: So, that would be the portion that is adjacent to the anatomical structure, is that right?

MR. ABELEV: That is correct. That is correct.

JUDGE ADAMS: So, in order for it to collect information, it would have to be somewhere within the image -- quote, unquote, image plane.

MR. ABELEV: Well, it could be above; it could be below. So, the -- for this particular invention to work optimally, you -- it's preferable for the fiber to be put on that image plane. And if you do that --

JUDGE ADAMS: So, in terms of image plane, you're just basically saying you send light down the fiber, it bounces off your anatomical structure and passes back up through your fiber. You need to have your fiber somewhere close to the anatomical structure, and I'm going to put a word to that and I'm going to call it an image plane. Is that right?

MR. ABELEV: No. The image plane, next to an anatomical structure

does not mean it's going to be at an image plane.

JUDGE ADAMS: Mm-hmm.

MR. ABELEV: It could be -- you know, it depends where -- it depends where you put the end of the fiber. You could be above, below, on the side. It doesn't -- you know, it could be a wrong image plane, you know, it could be not an image plane at all. It could be -- the end could be rotated or positioned to be diagonal or at 90 degrees. So, there's --

JUDGE ADAMS: So, it's going to have to be positioned in some manner to provide some useful information.

MR. ABELEV: That's correct.

JUDGE ADAMS: Ah. And you're suggesting that *Kittrell* doesn't put his endoscope into a patient to -- adjacent to an anatomical structure to obtain useful information. Is that your argument?

MR. ABELEV: The argument that he might get useful information, but it won't be at the image plane. It doesn't say it will be an image plane. He says it's --

JUDGE ADAMS: Well, where would it be if it's not at the image plane?

MR. ABELEV: It could be above the image plane, because --

JUDGE ADAMS: You just told me in order to get useful information you had to have it at the image plane.

MR. ABELEV: So, image plane is formed by the lens. Lens is the

what's concentrating.

JUDGE ADAMS: Thank you.

MR. ABELEV: Right, so that's -- that's what forms the image plane. He doesn't actually have the lens to make the image plane work. So, his lens is all the way in the back, 41. Lens is what --

JUDGE ADAMS: Well, I think the Examiner suggests that the lens can actually be part of the --

MR. ABELEV: It's part of the -- yeah, part of the housing.

JUDGE ADAMS: Right, right.

MR. ABELEV: So, if that goes through -- so if it's formed by the lens, if it acts like a lens, then it has to have a disclosure that based on the image plane formed by this 12 housing --

JUDGE ADAMS: That just couldn't be so obvious that it's not worth saying.

MR. ABELEV: It may not be.

JUDGE ADAMS: Okay. Anything else?

MR. ABELEV: Nope. That's it.

JUDGE ADAMS: All right, thank you for your time. Anything further?

MR. ABELEV: Thank you very much. Any questions?

JUDGE ADAMS: Okay, thank you.

MR. ABELEV: Thank you. And thank you for changing the time

around.

JUDGE ADAMS: Oh, absolutely.

(Whereupon, the proceeding at 10:40 a.m. was concluded.)